



1: J Lab Clin Med, 1996 Oct;128(4):417-22. Links

Is the ability of urinary tract pathogens to accumulate glycine betaine a factor in the virulence of pathogenic strains?

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The regulation of intracellular concentrations of organic solutes, including glycine betaine, is an important adaptive response to osmotic stress for *Escherichia coli*. The clinical significance of glycine betaine to uropathogens is not clear. Clinical isolates of *E. coli*, *Klebsiella pneumoniae*, *Enterobacter* species, *Pseudomonas aeruginosa*, *Proteus mirabilis*, *Staphylococcus aureus*, *S. saprophyticus*, and *Enterococcus faecalis* accumulated glycine betaine from hyperosmotic media. The addition of glycine betaine to hyperosmotic minimal medium accelerated the growth rates of all species tested except *P. mirabilis*. However, when clinical strains of *E. coli* were transferred from urine with low osmolality to hyperosmotic urine, there was no slowing of the growth rate. There was no difference in growth rates of *E. coli* isolates from acute pyelonephritis, cystitis, and asymptomatic bacteriuria nor from fecal isolates. The ability to accumulate osmolytes, although it may be a factor in the adaptation to hypertonic environments, was not related to virulence.

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